



The angle α is 30° in the example ($\pi/6$ in radians). The **sine of α** , which is the height of the red line, is

$$\sin \alpha = 1/2.$$

By the Theorem of Pythagoras we have $\cos^2 \alpha + \sin^2 \alpha = 1$. Thus the length of the blue line, which is the **cosine of α** , must be:

$$\cos \alpha = \sqrt{1 - 1/4} = \frac{1}{2}\sqrt{3}.$$

This shows that $\tan \alpha$, which is the height of the orange line, is:

$$\tan \alpha = \frac{\sin \alpha}{\cos \alpha} = \frac{1}{\sqrt{3}}$$